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| 09/617,068 | 07/16/2000 | Thomas Schwalbe | CELL0017 | 7221 |

| EXAMINER | |
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| LEV KOVICH, NATALIA A | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/617,068

Applicant(s)

SCHWALBE ET AL.

Examiner

Natalia Levkovich

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-19 and 28-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-19 and 28-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/21/2007 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-4, 6-19 and 29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1, 15 and 29 recite continuous flow of discharged products / solvents.

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Upon further reviewing the original specification, the Examiner found no support for this limitation. The specification provides support for continuous operation of the system, in general; as well as for continuous fluid supply and continuous or quasi- continuous modes of operation for the detection sub-system, in particular. However, there was found no support for a fluid that continuously flows out of the reaction chamber.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-4, 6-19 and 29-30 are rejected under 35 U.S.C. 112, second paragraph, as being unclear for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 1, the 'the system controller being configured to continuously operate the automated sequential reactant system over a period of time ', is unclear. Is the operation continuous or periodical (cyclic)? The same consideration applies to the 'period of time ' when the 'automated sequential reaction system is operated continuously'. See also claims 15 and 29. In claim 1, it is also unclear what structural features of the reactant supply distinguish it over the solvent supply.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1-9, 11-16, 18-19 and 28 - 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg et al. (WO009300625).

Rosenberg discloses an automated synthesizer comprising: multiple reservoirs for holding different reactants ['first reactant supply'-Ex.]; multiple reservoirs for holding different solvents ['solvent supply'-Ex.]; additional reservoirs for holding additional reactants ['second reactant supply'-Ex.]; a reaction chamber; a "delivery valve" for "selectively delivering each reactant or solvent" ['first supply valve'-Ex.] to the reaction chamber; a "directional flow valve" coupled to the reactor outlet ['output valve'-Ex.]; "liquid flow control means" [pumps-Ex.]; a recycling reservoir ['spent solvent reservoir'-Ex.]; a control means [computer-Ex.] 'controllably connected' to the above elements and monitoring the synthesis process (See Page 4, lines 5-35; Page 5, lines 5-35; Page 6, line 35).

With respect to claims 1 and 15, Rosenberg does not teach a product collector 'comprising a plurality of separate volumes', however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed a

product collector designed in the same manner as reactant / solvent supplies (that is, having multiple reservoirs), in the modified apparatus of Rosenberg, in order to provide selectivity to the process of product collection.

Referring to claims 6, 18 and 28, Rosenberg does not specifically teach a detector located between the reaction chamber and the output valve, however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have placed a detector at the reactor outlet, in the modified apparatus of Rosenberg, in order to control the process of product formation.

Regarding claim 11, although Rosenberg does not teach the reactor to be a micro- reactor, however, micro-reactors are widely used for bio synthesis, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed a micro-reactor in the modified apparatus of Rosenberg, in order to create libraries of substances using small amounts of reagents.

In reference to claim 13, although Rosenberg does not specifically teach the output valve to be a proportional valve, these valves are common in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed a proportional valve in the modified apparatus of Rosenberg, since these commercially available valves are well recognized for the capability, when used with external controls, to regulate the flow in heat exchangers or residence time of reactants within a reactor.

With respect to claims 7-8, 19 and 30, although Rosenberg does not teach a heat exchanger being included into the reactor, most synthesis processes require controlling

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such a basic parameter of a chemical reaction, as temperature. It would have been within the ordinary skill of an artisan at the time the invention was made to have equipped the synthesizer of Rosenberg with a heat exchanger for controlling / maintaining the temperature required for the synthesis.

9. Claims 10 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over y Rosenberg in view of Joslyn (US 6656423).

Rosenberg does not teach a residence time chamber, however, residence time chambers are routinely used in the art (See, for example, the Joslyn reference, column 6, lines 40-50). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed a residence chamber in the modified apparatus of Rosenberg, in order to control the reaction time.

Response to Arguments

10. Applicant's arguments filed 02/21/2007 have been fully considered but they are not persuasive, or moot in view of new grounds of rejection.

Applicant argues that in the system of Rosenberg, the 'outflow of fluid from the reaction chamber is cyclically interrupted each time the syringe pump changes position', and does not provide for continuous fluid discharge. On the other hand, Applicant agrees that the system of Rosenberg 'operates continuously, in that different fluids are introduced and removed from the reaction chamber continuously'. Examiner notes that the use of mechanical syringe pumps does not preclude continuity of fluid flow in a

system, since this would depend on many factors, such as speed of the pump, viscosity of fluids, or diameter of fluid conduits. In other words, the fluid outflow in the system of Rosenberg can be both continuous or periodic (depending on the above mentioned conditions).

Applicant argues that Rosenberg does not teach the controller 'as manipulating the flow rates of the reactants to accommodate different reaction times for different reactions', as recited in claims 15-16. Examiner disagrees. Rosenberg teaches controlling flow rates and reaction times, for example, on page 17, line 10 and on page 21, lines 1-5. i

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:


Coassin (US 5405585) – discloses a reactor system which includes a detector positioned down stream of the reactor, to monitor the system performance by detecting the discharge flow. The discharged fluids are directed to a waste container ("to collect the spent reagents") or to a collection device ("to collect any reaction end products from the chemical reactions").

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalia Levkovich whose telephone number is 571-272-2462. The examiner can normally be reached on Mon-Fri, 8 a.m.-4p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jill Warden
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